NSF-funded Research: Translational Impact and Innovation

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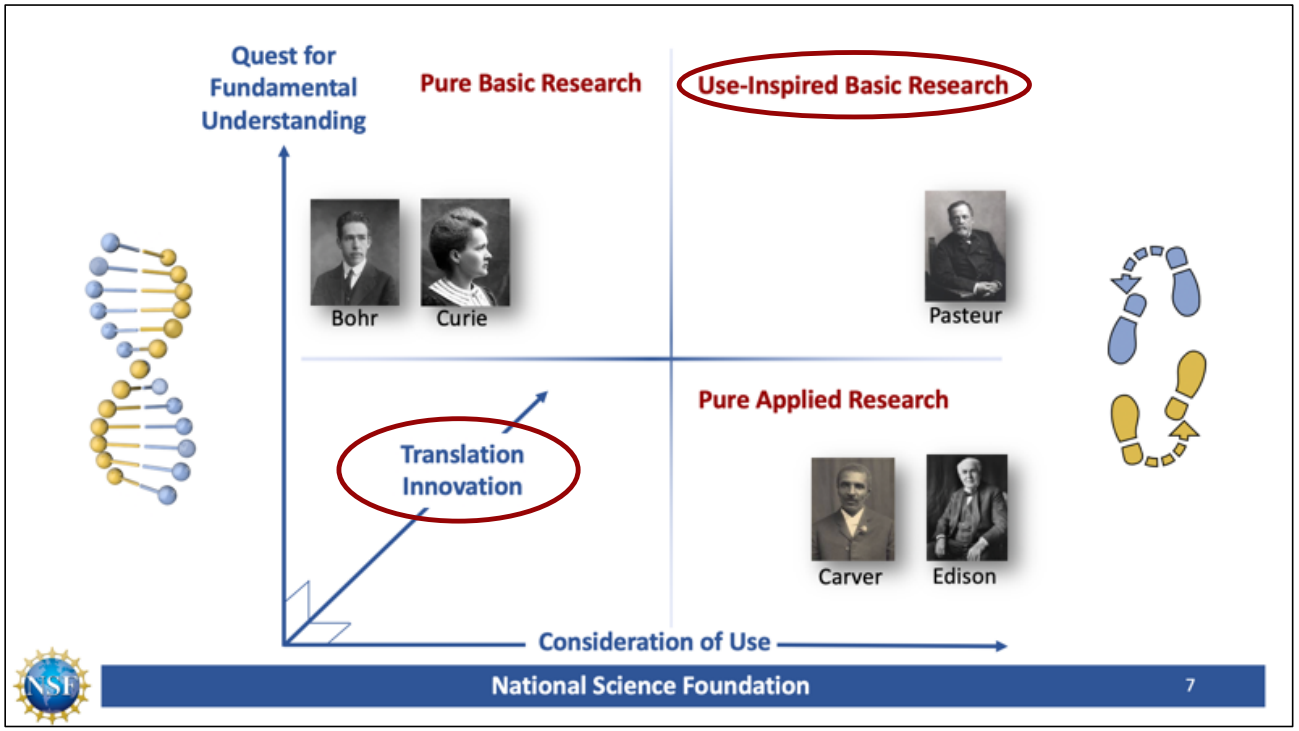
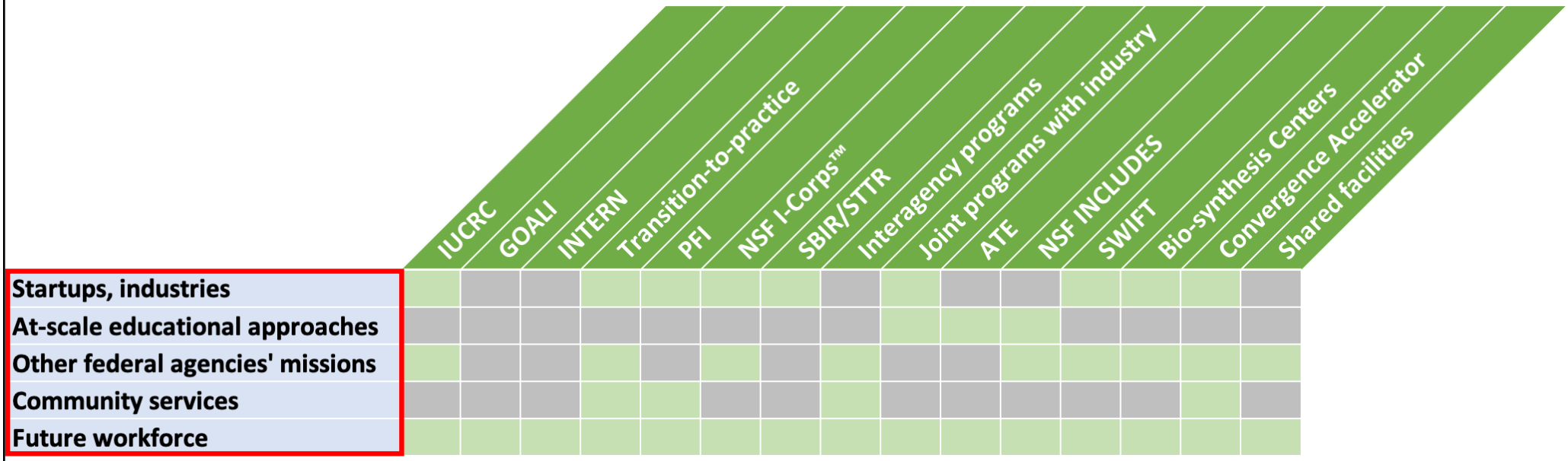
Today's objectives

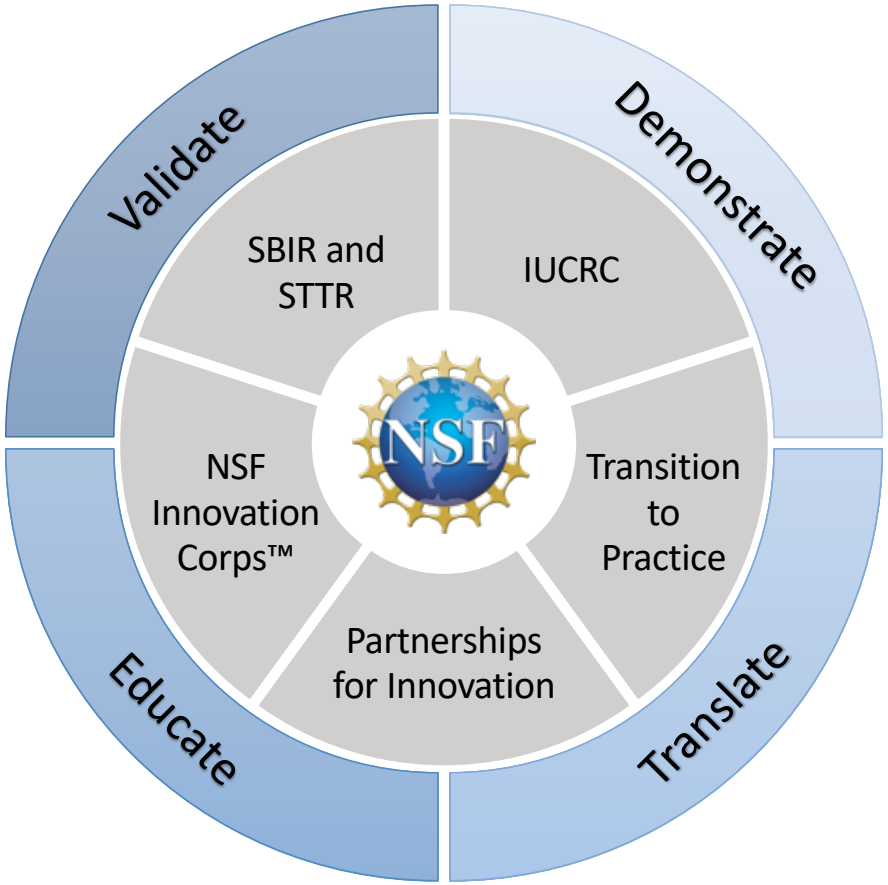


- Deeper dive into translational-impact portfolio
- Lessons learned, capacity
- Imagining tomorrow's innovation ecosystem

Translational impacts, mechanisms



New industries	Federal enterprise	At-scale education	Community services	Future Education



New industries	Federal enterprise	At-scale education	Community services	Future Education

In a recent 10-year period:

- **73 centers nationwide**
- **203** research sites
- **37** states
- **1,630** students hired by members

- Catalyzes pre-competitive research through sustained engagement between industry, academics and government agencies

$20K-$150K across Phases | $23M/year for >73 centers | 100s more centers

New industries	Federal enterprise	At-scale education	Community services	Future Education

- Mature ideas or research results
- Demonstrate as usable capabilities
- For the research community or industry

$150K-$1M per project | $12M per year | >$500M in viable projects

New industries	Federal enterprise	At-scale education	Community services	Future Education

- Create collaborations with industry
- License NSF-funded research outputs to third-party corporations or to start-up companies

$250K-550K per project

$22M per year

>$500M in viable projects

I-CORPS™ NSF Innovation Corps

- Train NSF-funded faculty, students in innovation and entrepreneurship skills to spur translation of research to marketplace

- 8 Nodes, 99 Sites to date
- Teams focus on **Product-Market Fit**
- Curriculum/process focus
- Nearly 800 startups created to date

$15M/Hub; $50K/Team | $37M/year for 200 Teams | 1000s of Teams per year

America's SEED FUND
SBIR.STTR

- Up to $1.75M in R&D funding to develop transformative, deep tech, high-impact technologies

- Transforms scientific discovery into products and services with commercial and societal benefit

$250K Phase I; $1M Phase II; $500K Phase IIB

$234M per year

>$1B in requests

Exploratory to translational: Biomarker colocalization

NanoView BIOSCIENCES

1996
NSF CAREER award to PI Selim Ünlü, Boston U

2011
PFI award to Ünlü and student, David Freedman

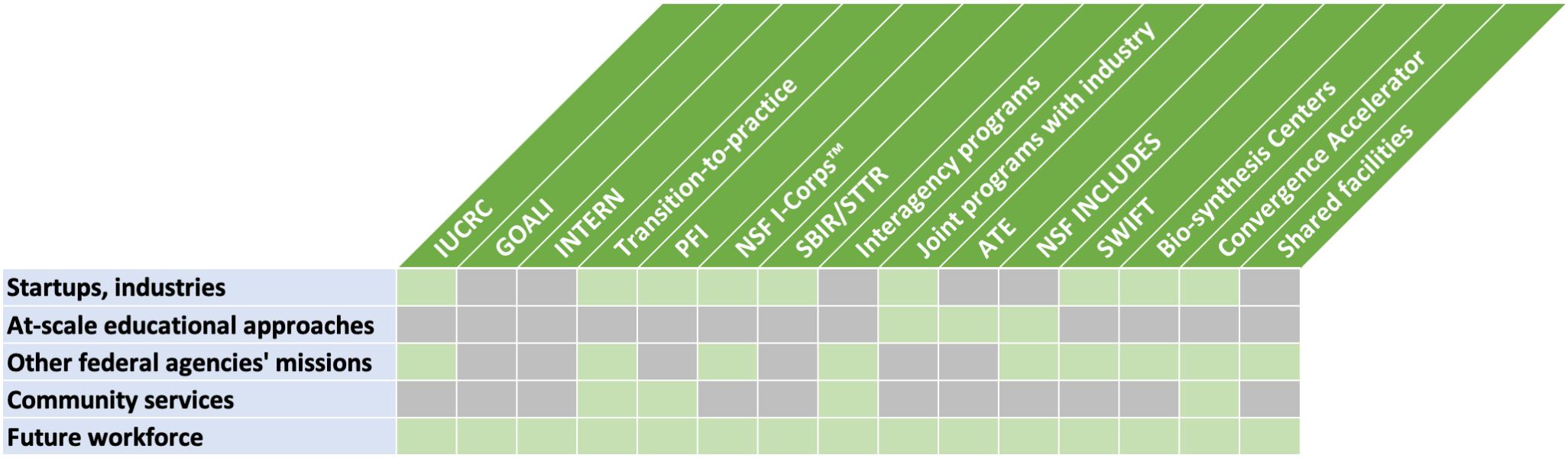
2013
Team completes NSF I-Corps

2015
NSF SBIR Phase I award

2018
NSF SBIR Phase II award

2020
Company completes fundraising round – raises $15M

Translational impacts, mechanisms



At least $500M per year

>10X untapped capacity

Envisioning tomorrow's innovation ecosystem

"…The [Institutes] will [enable] tight coupling of multiple sectors [that] will enhance innovation across the spectrum of foundational to applied R&D by enabling rapid feedback and providing a clear pathway to translate discoveries to practice..."

"…we must take full advantage of [the] synergistic combination of philanthropic and government support for science … government can and should cooperate and coordinate with philanthropy … in the support of science..."

THE KAVLI FOUNDATION

DAY ONE PROJECT

"Tackle scientific and technological challenges that cannot be efficiently addressed by standard organizational structures [and] benefit society broadly in ways that … harbor opportunities for acceleration…"

Envisioning tomorrow's innovation ecosystem

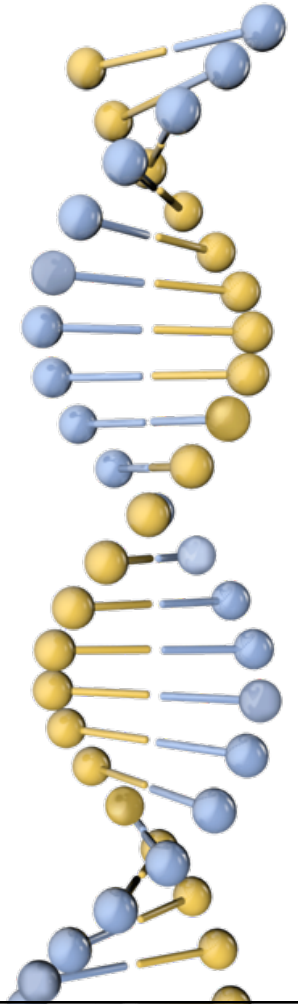
NSF, NSB Listening Sessions

- Tackling grand societal challenges
- Diversifying the STEM workforce
- Leveraging "blended teams"

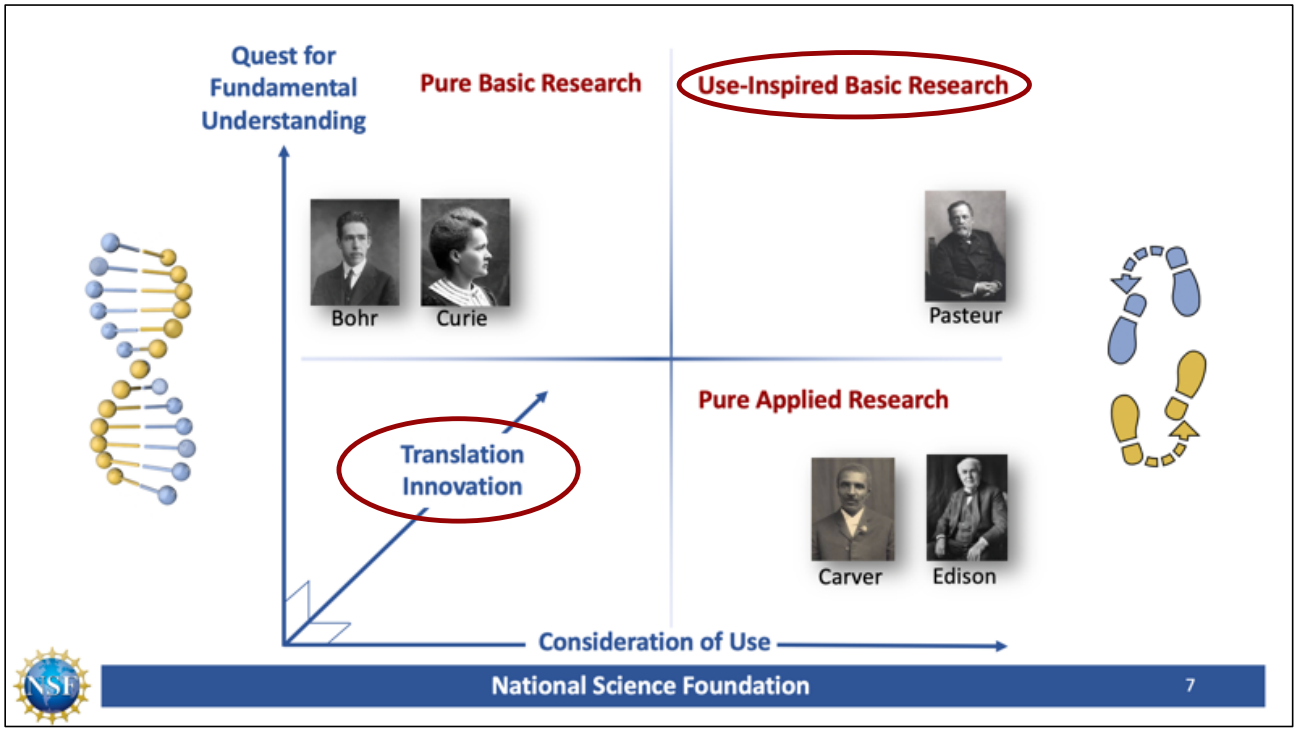
Imagining innovation accelerators

- Use-inspired, challenge-driven, convergent
- Leveraging the virtuous cycle of foundational and use-inspired research
- Long-term, large-scale
- Public-private partnerships
- Innovation and technology transfer
- Education, workforce, diversity

Scalable growth: 2, 5, 10X



The seeds of a crosscutting emphasis



- Use-inspired, translation, and innovation are all part of our DNA
- Opportunity to elevate, enhance
- Drives our mission, our S&E enterprise, our future